

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte UWE NEUMANN

Appeal No. 1998-0472
Application No. 08/493,571

HEARD: February 21, 2001

Before GARRIS, TIMM and PAWLIKOWSKI, **Administrative Patent Judges.**

PAWLIKOWSKI, **Administrative Patent Judge.**

Decision on Appeal

This is a decision on appeal from the final rejection of claims 1-12 and 19-21. Claim 13 has been withdrawn from consideration.

The subject matter on appeal relates to a process for the preparation of an alkylated or aralkylated polyhydroxy compound. This compound is prepared by reacting (A) a polyhydroxy aromatic compound with (B) an alkene or aralkene

compound in the presence of a (C) a mixture of oxalic acid and boric acid in a molar ratio of 1:5 to 1:0.1, at a temperature above room temperature. Further details of this appealed subject matter are set forth in claim 1 which reads as follows:

1. A process for the preparation of an alkylated or aralkylated polyhydroxy aromatic compound comprising reacting a polyhydroxy aromatic compound (A) with an alkene or aralkene compound (B) at a temperature above room temperature in the presence of a mixture (C) of oxalic acid and boric acid in a molar ratio of oxalic acid to boric acid of from 1:5 to 1:0.1.

The references relied upon by the examiner are as follows:

Rothrock	2,079,633	May 11, 1937
Gobran	4,039,724	Aug. 2, 1977
Oppenlaender et al. (Oppenlaender)	4,189,445	Feb. 19, 1980
McAllister et al. (McAllister)	4,275,170	Jun. 23, 1981
Hoggins et al. (Hoggins)	4,359,438	Nov. 16, 1982
Nelson	4,390,680	Jun. 28, 1983
Durairaj	5,300,618	Apr. 5, 1994
German Patent (Dorogomilovsky Khimicheskii zavod im. Frunze, Moscow)	1,543,512	Jul. 31, 1969

We note that the Japanese reference 59-65034 has been withdrawn from use as a reference against appellant's claims because the examiner did not list or mention it in his Answer.

Claims 1-12 and 21 are rejected under 35 U.S.C. § 103 as being unpatentable over German Patent Nos. 1,543,512 and 2,330,850, Oppenlaender, Nelson, and Durairaj in view of

Hoggins, McAllister, and Rothrock. We note that with respect to German Patent No. 2,330,850, the examiner has issued a new ground of rejection because this is a newly cited reference. (Answer, page 4).

Claims 19 and 20 are rejected under 35 U.S.C. § 103 as being unpatentable over German Patent Nos. 1,543,512 and 2,330,850, Oppenlaender, Nelson, and Durairaj in view of Hoggins, McAllister, and Rothrock, and further in view of Gobran. We note that with respect to German Patent No. 2,330,850, the examiner has issued a new ground of rejection because this is a newly cited reference. (Answer, page 4).

Opinion

For the reasons set forth below, we will reverse each of the above noted rejections.

The pivotal consideration for each of the examiner's § 103 rejections concerns the limitation found in claim 1 of preparing an alkylated or aralkylated polyhydroxy aromatic compound in the presence of a mixture of oxalic acid and boric acid.

Appellant argues that the primary references of German Patent No. 1,543,512, Oppenlaender, Nelson, and Durairaj do not disclose a mixture of oxalic acid and boric acid. (Brief, pages 4-7). Appellant also argues that German Patent No. 2,330,850 also does not teach a mixture of oxalic acid and boric acid. (Reply Brief, page 2). The examiner admits that these primary references do not disclose a mixture of oxalic acid and boric acid in a molar ratio of

from 1:5 to 1:0.1. (Answer, page 5).

The examiner relies upon Nelson for teaching the use of a mixture of acid catalysts in an alkylation process, including Lewis acids (boric acid is a Lewis acid). (Answer, pages 6 and 8).

Appellant argues that a mixture of oxalic acid and boric acid is not specifically disclosed in Nelson. (Brief, page 6, Reply Brief, page 2). Upon our review of Nelson, we find that Nelson discloses "[s]uitable acid catalysts which can be employed herein include, for example, Lewis Acids, alkyl, aryl and aralkyl sulfonic acids and disulfonic acids or diphenyloxide and alkylated diphenyloxide, sulfuric acid, mixtures thereof and the like" (col. 3, lines 31-35). Hence, we agree with appellant that a mixture of oxalic acid and boric acid is not specifically disclosed in Nelson. Nelson simply suggests that a mixture of suitable acid catalysts can be used.

The examiner then relies upon Hoggins for teaching the alkylation of phenol with styrene "using the same or different acid catalyst as used for the reaction of phenol with formaldehyde". Such an acid catalyst can be oxalic acid. (Answer, page 6). Appellant rightly argues that Hoggins does not teach use of a mixture of oxalic acid and boric acid.

The examiner next relies upon McAllister for teaching the reaction of phenol with formaldehyde in the presence of a Lewis acid, such as boric acid. In the same manner, the examiner relies upon Rothrock for teaching the use of boric acid in a reaction of phenol with formaldehyde. (Answer, page 6). The examiner concludes that it would have been obvious to conduct an aralkylation of a polyhydroxy aromatic phenol with the oxalic acid of the German patents, Oppenlaender, Nelson, and Durairaj, in combination with the boric acid of McAllister and Rothrock.

Appellant argues that McAllister is directed to a condensation reaction rather than an addition product as in the present invention. Appellant also argues that McAllister is concerned with polyhydric phenols and Hoggins is concerned with phenols, and therefore no logical nexus exists between these 2 references. (Brief, page 8). The examiner rebuts and states that McAllister and Rothrock disclose the reaction of polyhydric phenols and phenols, and that therefore, boric acid catalyzes the reaction regardless of the quantitative phenolic functionality. The examiner also states that he has relied upon Hoggins for establishing equivalency of boric acid to catalyze either phenol-formaldehyde reactions or aralkylation reactions, and that therefore it is a matter of ordinary skill in the art to employ the boric acid of McAllister and Rothrock together with the oxalic acid of the German patents, Oppenlaender, Nelson, and Durairaj, in view of the teaching of Nelson that mixtures of acid catalysts are suitable in alkylation reactions. (Answer, page 11).

We must agree with the examiner that McAllister and Rothrock do establish that boric acid can catalyze phenols, whether polyhydric or not polyhydric. However, we note that this is in the context of a reaction between phenol with formaldehyde, not in the context of a reaction between a polyhydroxy aromatic compound with an alkene or aryalkene, as recited in appellant's claim 1.

Also, although the examiner attempts to establish an equivalency between acid catalysts used for phenol-formaldehyde reactions and acid catalysts used for the reaction concerning alkylation of phenol, based upon the disclosure of Hoggins, we note that Hoggins is in the context of phenol only, not a polyhydroxy aromatic compound.

Furthermore, we question the examiner's reasons to combine the teachings of McAllister and Rothrock with the primary references. The examiner states that it would have been obvious to combine oxalic acid with boric acid in order to achieve improvements from the use of boric acid, such as enhanced fire retardancy, reduced combustion gases, oxidation protection as taught in McAllister, and oil solubility as taught in Rothrock. (Answer, pages 6-7). However, we again note that these improvements taught in McAllister and Rothrock are in the context of a resultant polymer resin of a phenol-formaldehyde type reaction. It is difficult to know whether such improvements would be obtained for polymers resulting from a polyhydric phenol-alkene/aryalkene type reaction as claimed in appellant's claim 1, and the examiner has not explained why one skilled in the art would reasonably believe that the same results

would be obtained or whether one skilled in the art would have expected to achieve the same results or additive results. Listing several compounds as interchangeable for one purpose will not establish their equivalency for all purposes, In re Jezl, 396 F.2d 1009, 1012, 158 USPQ 98, 100 (CCPA 1968). Moreover, appellant's invention is concerned with modification of polyhydric aromatic compounds in such a way that the solubility in aromatic solvents of the polycondensation products prepared therefrom is improved. (specification, page 3, lines 14-16).

We note that "[o]bviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination." In re Geiger, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987). Here, absent hindsight, the skilled artisan would not have found it obvious to conduct appellant's claimed reaction in the presence of both oxalic acid and boric acid for the reasons discussed above. Combining the two acids may have been obvious to try, but this does not constitute the standard for combining references under § 103. Id. at In re Geiger 815 F.2d at 687, 2 USPQ at 1278; cf. In re Wesslau, 353 F.2d 238, 241, 147 USPQ 391, 393 (CCPA 1965).

Hence, we reverse the rejection of claims 1-12 and 21 under 35 U.S.C. § 103 as being unpatentable over German Patent Nos. 1,543,512 and 2,330,850, Oppenlaender, Nelson, and Durairaj in view of Hoggins, McAllister, and Rothrock. We also reverse the rejection of claims 19 and 20 under 35 U.S.C. § 103 as being unpatentable over German Patent

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Nos. 1,543,512 and 2,330,850, Oppenlaender, Nelson, and
Durairaj in view of Hoggins, McAllister, and Rothrock, and
further in view of Gobran.

REVERSED

BRADLEY R. GARRIS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
CATHERINE TIMM)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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